
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Assess McKenzie Watershed Habitat And Prioritize Projects

BPA project number: 20088

Contract renewal date (mm/yyyy): ☐ **Multiple actions?**

Business name of agency, institution or organization requesting funding

McKenzie River Focus Watershed Council

Business acronym (if appropriate) _____

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses

2.2, 2.4A.3, 3.1B.1, 3.3D.1, 6.1C.1, 6.5, 7.0B.4, 7.6A.1, 7.6, 7.7, 10.2C.1, 10.5, 11.3

FWS/NMFS Biological Opinion Number(s) which this project addresses

NMFS Consultation Number [711], USFWS Log no. 1-7-98-F-356

Other planning document references

Oregon Department of Fish and Wildlife's McKenzie Sub-Basin Fish Management Plan, 1988. Oregon Plan Supplement on Steelhead, 1997. Willamette River Basin Task Force: Recommendations to Governor John Kitzhaber, 1997. Clinton Administration's Northwest Forest Plan, 1993.

Habitat assessment and improvement needs also are referenced in the McKenzie Watershed Council's Action Plan for Water Quality and Fish and Wildlife Habitat (1996), Draft Revisions to the Oregon Department of Fish and Wildlife's McKenzie Sub-basin Fish Management Plan (1998), and the U.S. General Accounting Office's Oregon Watersheds: Many Activities Contribute to Increased Turbidity During Large Storms report (1998). This assessment is supported by the McKenzie Watershed Council and its member organizations, including Oregon Department of Fish and Wildlife, U.S.D.I. Bureau of Land Management, U.S.D.A. Forest Service, and Weyerhaeuser Company.

Short description

Assess McKenzie Watershed habitat by synthesizing recent watershed analyses and gathering data to address information gaps. The project will provide a basin-wide context for fish & wildlife habitat protection, restoration and monitoring strategies.

Target species

Native anadromous fish: spring chinook salmon

Native resident fish: bull trout, Oregon chub, cutthroat trout, rainbow trout, and others

Wildlife: Peregrine falcon, Northern spotted owl, Western pond turtle, wolverine, Townsend's big-eared, spotted frog

Section 2. Sorting and evaluation

Subbasin
Willamette

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input type="checkbox"/> Resident fish <input type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input checked="" type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input checked="" type="checkbox"/> Research & monitoring <input type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
9206800	Implementation of Willamette Basin Mitigation Program--Wildlife	Targets acquisition of critical wildlife habitat in the Upper Willamette Basin. The project identifies and prioritizes land acquisitions in the McKenzie/Willamette confluence and lower McKenzie Watershed areas.
9405300	Bull Trout Assessment - Willamette/McKenzie	Monitors the distribution, population trends, and habitat use of bull trout populations in the Upper Willamette Basin, and develops and implements reintroduction plan. The project identifies high-quality bull trout habitat for protection and restoration.
9607000	McKenzie Watershed Council Coordination	Coordinates McKenzie Watershed Council administration, project planning, implementation and monitoring among multiple stakeholders/landowners. The proposed project would be guided by the ongoing McKenzie Watershed Council framework.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Synthesize current knowledge of historic and present fish and wildlife populations and habitat conditions throughout the McKenzie Watershed and identify information gaps	a	Work with Fish and Wildlife Task Group to develop list of null hypotheses regarding fish and wildlife populations and habitat to focus data synthesis, collection, and analysis
		b	Collect, organize and synthesize information from completed sub-watershed analyses, agency reports and other studies
		c	Identify the target species, the status of those species, and key habitat attributes for maintaining or improving populations
		d	Assess types, extent and locations of historic habitat; summarize current condition of terrestrial and riparian-aquatic habitat modifications; identify known existing high-quality habitat
		e	Identify and assess the status and trends of key human modifications (e.g., dam regulation of temperature regimes) and natural characteristics (e.g., degree of channel confinement) and processes of the watershed and how they function and interact
		f	Work with Fish and Wildlife Task Group/Watershed Council to identify information gaps
2	Where information gaps exist, assess types, extent, and locations of habitat modifications and existing high-quality habitat	a	Assess habitat conditions through time using historical maps, photographs and other information sources
		b	Determine the location, nature, and extent of habitat changes
		c	Develop a chronology of habitat change and describe the natural and human-caused disturbance events that influence the

			direction of the changes
		d	Describe and quantify current terrestrial and riparian-aquatic habitat conditions, including high- quality habitat
3	Develop GIS database for fish and wildlife habitat in the McKenzie Watershed	a	Develop GIS data layers with locations and information on historic and current terrestrial and riparian-aquatic habitat quality
		b	Develop GIS data layers with locations and information on habitat protection and restoration sites and priorities
4	Project the impact of current growth and development trajectories on fish and wildlife habitat/populations throughout the basin	a	Use census and land use planning information to gauge population growth and development trends
		b	Project specific locations (e.g., flood plains) and nature (e.g., urban or rural residential) for development in the basin
		c	Gauge impacts of projected land use changes on fish and wildlife habitat quality/quantity and populations
5	Delineate locations for potential habitat protection and restoration and describe benefits to fish and wildlife	a	Identify important terrestrial and riparian-aquatic habitat refuges or areas sensitive to management activities
		b	Identify areas that most directly affect riparian-aquatic habitat function (e.g., wetlands, side channels, and flood plains) or terrestrial habitat quality (e.g., multi-layered forest stands)
		c	Identify/prioritize areas/habitat types that are likely to experience significant land-use transformations in the future
		d	Work with Fish and Wildlife Task Group/Watershed Council to identify/update habitat protection and restoration goals and objectives based on key habitat attributes
		e	Identify how site-specific protection or restoration measures will maintain or improve populations
		f	Identify areas that may be easily restored to provide more refuges and/or connect productive habitat types
6	Prioritize locations for habitat restoration and protection in the McKenzie Watershed	a	Provide recommendations on site-specific terrestrial and riparian-aquatic protection and restoration projects
		b	Work with Fish and Wildlife Task Group/Watershed Council to identify protection and restoration project priorities, including land acquisitions
7	Develop biological monitoring and evaluation plan for habitat conditions in the McKenzie Watershed	a	Determine watershed indicators to monitor changes in biological or physical states and assess influences of human and natural disturbances and restoration activities
		b	Link the monitoring and evaluation plan

			back to the protection and restoration goals and objectives
		c	Work with Fish and Wildlife Managers/Watershed Council to determine monitoring plan's institutional and financial commitments and time lines
8	Produce final report	a	Develop draft report that incorporates findings, recommendations and monitoring and evaluation plan
		b	Fish and Wildlife Task Group/Watershed Council provide draft report review and recommend revisions
		c	Produce final report

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	1/2000			15.00%
2	1/2000	5/2000			20.00%
3	5/2000	6/2000			10.00%
4	5/2000	6/2000			15.00%
5	5/2000	6/2000			10.00%
6	6/2000	7/2000			10.00%
7	8/2000	8/2000			10.00%
8	9/2000	9/2000			10.00%
				Total	100.00%

Schedule constraints

Permits may be required before undertaking species and habitat surveys needed to fill information gaps identified when synthesizing existing data. The McKenzie Watershed Council will consult with ODFW, NMFS, and USFWS to obtain all necessary permits.

Completion date

FY2000

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel		%0	
Fringe benefits		%0	
Supplies, materials, non-expendable property		%0	
Operations & maintenance	Contract management by McKenzie	%8	14,000

	Watershed Council		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	
NEPA costs		%0	
Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%0	
Indirect costs	Administrative charge for fiscal management by Cascade Pacific RC&D	%8	14,000
Subcontractor	Sub-contract assessment; contractor determined by RFP	%85	155,000
Other		%0	
TOTAL BPA FY2000 BUDGET REQUEST			\$183,000

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
U.S. Forest Service	In-kind technical assistance	%4	10,000
Bureau of Land Management	In-kind technical assistance	%4	10,000
Weyerhaeuser Company	In-kind technical assistance	%4	10,000
Eugene Water & Electric Board	In-kind technical assistance	%4	10,000
Total project cost (including BPA portion)			\$223,000

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$0	\$0	\$0	\$0

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	Benner P. A., and J. R. Sedell. 1997. Upper Willamette River landscape: a historic perspective. Pages 23-45 in A. Laenen and D.A. Dunnette, editors. River quality: dynamics and restoration. Lewis, New York.
<input type="checkbox"/>	Bradbury, B. et al. 1995. Handbook for prioritizing native salmon and watershed protection and restoration. Pacific Rivers Council, Eugene, OR.
<input type="checkbox"/>	Buchanan, D.V., M.L. Hanson, and R.M. Hooton. 1997. Status of Oregon's bull trout. Oregon Department of Fish and Wildlife, Portland, OR.
<input checked="" type="checkbox"/>	Department of Environmental Quality. 1998. The McKenzie Basin water quality report. Oregon Department of Environmental Quality, Laboratory Division, Portland, OR.
<input type="checkbox"/>	Howell, P., J. Hutchinson, and R. Hooton. 1988. McKenzie Subbasin fish management plan. Oregon Department of Fish and Wildlife, Springfield, OR.
<input type="checkbox"/>	Hulse, D. et al. 1997. Possible futures for the Muddy Creek Watershed, Benton County, Oregon. University of Oregon, Eugene, OR.
<input type="checkbox"/>	Lichatowich, J., L. Mobrand, L. Lestille and T. Vogel. 1995. An approach to the diagnosis and treatment of depleted Pacific salmon populations in Pacific Northwest watersheds. Fisheries 20(1): 10-18.

<input checked="" type="checkbox"/>	Ligon, F. 1991. The fluvial geomorphology of the lower McKenzie River. EA Engineering, Science and Technology, 41 Lafayette Circle, Lafayette, CA.
<input checked="" type="checkbox"/>	McKenzie Watershed Council. 1996. Technical report for water quality and fish and wildlife habitat. Lane Council of Governments, Eugene, OR.
<input type="checkbox"/>	Mellen, K., M. Huff and R. Hagededt. 1995. HABSCAPES: reference manual and user's guide. Unpublished manuscript, U.S. Forest Service.
<input type="checkbox"/>	Miller, J.D., et al. 1997. Willamette Basin Task Force: recommendations to Governor John Kitzhaber.
<input checked="" type="checkbox"/>	Minear, P.J. 1994. Historical change in channel form and riparian vegetation of the McKenzie River, Oregon. M.S. Thesis, Oregon State University, Corvallis, OR.
<input type="checkbox"/>	Regional Interagency Executive Committee et al. 1995. Ecosystem analysis at the watershed scale. Federal guide for watershed analysis, Version 2.2. Regional Ecosystem Office, Portland, OR.
<input type="checkbox"/>	Scott, J.M., T.H. Tear, and F.W. Davis, editors. 1996. Gap Analysis: A landscape approach to biodiversity planning. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.
<input type="checkbox"/>	Spence, B.C., G.A Lomnicky, R.M. Hughes and R.P. Noritzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, OR.
<input type="checkbox"/>	U.S. Forest Service. 1998. I-90 Land Exchange. Draft environmental impact statement, USDA Forest Service/Plum Creek Timber Company, L.P.
<input checked="" type="checkbox"/>	U.S. General Accounting Office. 1998. Oregon watersheds: many activities contribute to increased turbidity during large storms. GAO/RCED-98-220. Washington, DC.
<input type="checkbox"/>	Washington Department of Natural Resources. 1995. Board manual: Standard methodology for conducting watershed analysis under Chapter 222-22 WAC. Washington Forest Practices Board. Version 3.0. Olympia, WA.
<input type="checkbox"/>	

PART II - NARRATIVE

Section 7. Abstract

The goal of this project is to protect and restore habitat of anadromous and resident fish, and wildlife in the McKenzie Watershed. Specifically, the project will identify critical habitat for spring chinook salmon, bull trout, and several "at risk" wildlife species. The proposed assessment would provide a comprehensive, technical framework by which options for habitat protection and restoration may be prioritized and evaluated. The assessment will synthesize existing information on McKenzie Watershed fish and wildlife habitat, including historical change and current status. Where there are gaps in the habitat knowledge base, the assessment will collect new information. Building upon this base of information, the assessment then will explore impacts on fish and wildlife habitat in the McKenzie Watershed from projected growth and development, and identify historical and current high-quality habitat locations, and potential sites for habitat protection and restoration. Information generated by this project will be used, in consultation with technical advisors, landowners, fish and wildlife managers, and the McKenzie Watershed Council, to prioritize specific areas for habitat protection and restoration. The project will conclude with a comprehensive assessment report, recommendations for projects, including land acquisitions, and a biological monitoring and evaluation plan for habitat in the McKenzie Watershed. Although the fish and wildlife habitat information will be site-specific to the McKenzie, data will be maintained in the Council's GIS database for use in regional recovery efforts. The assessment will require one year (FY2000) to complete.

Section 8. Project description

a. Technical and/or scientific background

The McKenzie Watershed encompasses an area of approximately 1,300 square miles, occupying about 12 percent of Oregon's Willamette Basin. Bounded on the east by the crest of the Cascade Mountains, the McKenzie River joins the Willamette River just north of the Eugene-Springfield metropolitan area.

The McKenzie Watershed supports anadromous and resident fish species, including spring chinook, bull trout, and native "McKenzie reddsides" rainbow trout, and provides habitat for hundreds of wildlife species. Historical data show that the McKenzie River produced an estimated 40% of the run of spring chinook above Willamette Falls, but these runs have dramatically declined (Howell et al. 1988). Earlier this year, the National Marine Fisheries Service (NMFS) proposed Upper Willamette River ESU of spring chinook for listing as "threatened" under the Endangered Species Act. In addition, bull trout were listed as "threatened" in the Lower Columbia River Distinct Population Segment by the U.S. Fish and Wildlife Service (USFWS). The McKenzie Watershed is the last major refuge of wild bull trout in the Oregon Cascades and now is considered the most important remaining area for the production of native Upper Willamette spring chinook (Buchanan et al. 1997). The watershed provides habitat for several wildlife species of concern both statewide and federally. Species that utilize the McKenzie Watershed for habitat include the peregrine falcon, Northern spotted owl, Western pond turtle, northern goshawk, wolverine, Townsend's big-eared bat, spotted frog, great gray owl, and red tree vole. The McKenzie River also produces the highest water quality of any river in the Willamette Basin and is the sole source of drinking water to over 200,000 residents of Lane County (DEQ 1998).

The McKenzie Watershed represents the best opportunity in the Willamette Basin for the long-term persistence of native fish and wildlife assemblages. The watershed supports continuous blocks of high-quality fish and wildlife habitat. Nearly seventy percent of the watershed is in federal ownership, primarily concentrated in the upper portions of the drainage. In a recent survey, the quantity and quality of existing spring chinook spawning habitat in the upper watershed was found to be good, with little change from what was found historically (Sedell et al. 1991). Maintaining and expanding the connectivity of high-quality habitat areas is important to protect habitats that are large and well dispersed enough to be resilient in the face of large-scale catastrophic disturbance.

Fish and wildlife habitat in the McKenzie Watershed has been lost over time, with most habitat degradation concentrated in the riparian areas and the lower basin. The majority of the riparian area along the river's mainstem, including the upper watershed, is privately owned and becoming increasingly fragmented through timber harvest, roads, and residential development (Minear 1994). The McKenzie Watershed has followed the general trend for the Willamette Basin where land use change has been greatest at the periphery of major metropolitan areas such as Eugene-Springfield (Hulse et al. 1997). The lower McKenzie River valley (beginning at RM 40) is increasingly in urban, residential, and agricultural land uses. This portion of the watershed was characterized historically by an unconfined valley, dynamic channel shifts, and abundant side-channel areas (Ligon 1991). Dikes and riprapping have confined large portions of the lower river to a set channel, with dramatic decreases in hydraulic complexity, loss of large areas of side-channel habitat, and over a fifty-percent reduction in mid-channel islands (Ligon 1991). Juvenile salmon move downstream from upper McKenzie tributaries, through the mainstem, and take refuge in calmer, side-channel areas (McKenzie Watershed Council 1996, J. Ziller, ODFW, personal communication). Thus the need to protect existing areas of ecological function and re-establish such areas where they have been lost or degraded and increase connectivity with the mainstem McKenzie River is evident.

To address these challenges to watershed health, the McKenzie Watershed Council (Council) was convened and initiated by Lane County and the Eugene Water & Electric Board (EWEB) in 1993. The Council acts as an advisory body with the purpose of helping to address management issues in the watershed and to provide a framework for coordination and cooperation among key interests. The mission of the 20-member council is to foster stewardship of McKenzie Watershed resources, deal with issues in advance of resource degradation, and ensure sustainable watershed health, function, and uses.

The Council developed a watershed planning framework to guide its future activities. Watershed analyses and other studies have been completed in sub-watersheds covering over three-quarters of the watershed, including all federal lands and the large portion of the industrial forest land base under Weyerhaeuser ownership. Information from these assessments, and the scientific data and expertise gathered at the H.J. Andrews Experimental Forest, provide a rich store of information and expertise for guiding management strategies in the McKenzie Watershed. This knowledge base and advice from the

Council's Aquatic Habitat/Water Quality Task Group served as the foundation for the development of general action plans. The Council is developing a coordinated strategy for re-establishing the historic mosaic of habitats in the watershed by protecting existing high quality habitats and restoring watershed structure and function in areas where it is degraded.

A comprehensive assessment of the entire McKenzie Watershed is needed to guide project selection by the Council. While analyses have been completed for many sub-watersheds and portions of the mainstem, this information has not been synthesized into a comprehensive watershed context that can be used to prioritize site-specific restoration projects and land acquisitions. The completed studies and sub-watershed assessments provide a fragmented picture of the watershed. Many of the assessments concentrated on tributary streams and did not focus on habitat in the mainstem. The studies completed on mainstem geomorphology (i.e., Minear 1994 and Ligon 1991) did not use similar methodologies as other completed assessments and do not provide site-specific information on fish and wildlife habitat attributes. In addition, the assessments completed on Weyerhaeuser lands do not provide information on wildlife habitat. A recent U.S. General Accounting Office (GAO) study acknowledged the need for a watershed-wide analysis of conditions to guide planning, decision-making and implementation for projects related not only to biological resources, but also water quality in municipal watersheds (U.S. GAO 1998). The Aquatic Habitat Task Group, based on completed studies and professional judgement, has targeted habitat protection and restoration in the general area of the lower river valley where there has been the greatest loss of side-channel habitat and riparian function. This prioritization, however, is not site-specific, does not take into account projected growth and development pressures, and does not provide a holistic context for fish and wildlife habitat in the entire basin.

b. Rationale and significance to Regional Programs

The status of the McKenzie Watershed has regional significance. Willamette Basin spring chinook and bull trout populations, along with populations of numerous mammals, birds, reptiles, and amphibians have declined dramatically (Miller et al. 1997). In the case of spring chinook salmon and bull trout, the McKenzie Watershed supports viable wild populations that are found nowhere else in the Willamette Basin. The persistence of chinook and bull trout in the McKenzie is critical to the recovery of these species throughout the Willamette Basin. The importance of habitat in the McKenzie Watershed is also integral to the recovery of many wildlife species. One hundred percent of the "Top 15 Species/Groups of Species Most at Risk" in the Willamette Basin (J. Martin, ODFW, personal communication) are found in the McKenzie Watershed. For these and other wildlife species, the watershed may provide habitat(s) that are under-represented in other areas of the Willamette Basin.

ODFW, in cooperation with the Willamette Basin Restoration Initiative, is developing a comprehensive fish and wildlife conservation plan for the Willamette Basin. This planning process recognizes the importance of the McKenzie Watershed in recovery of fish and wildlife populations in the Willamette Basin (J. Martin, ODFW, personal communication). Preliminary discussions between the Council and ODFW suggest that the Willamette Basin plan would recommend securing populations and increasing the number of individuals comprising spring chinook and bull trout populations in the McKenzie. The McKenzie then may provide source populations of fish and wildlife to expand into historical habitat throughout the Willamette Basin. The proposed comprehensive fish and wildlife conservation plan for the Willamette Basin, which likely would rely heavily on the McKenzie Watershed as critical habitat for source populations, may serve as the basis for protection and restoration activities to be implemented by the Willamette Basin Restoration Initiative. Yet without comprehensive information about the past, present, and future condition of habitat for these species in the McKenzie Watershed, protection and restoration is difficult and recovery efforts may result in inefficient use of limited funds.

The McKenzie Watershed Council acknowledges the recommendation from the ISRP about the importance of watershed assessment in guiding worthwhile, effective restoration projects. This proposal also addresses the following elements required by ISRP for all habitat restoration proposals:

(1) What is the distribution of the species of interest within the watershed, in relation to the location of the proposed restoration activity?

Primary species of interest in the McKenzie Watershed are spring chinook salmon, which utilize habitat throughout the watershed, and bull trout, which primarily use the middle and upper McKenzie Watershed mainstem and reservoirs for foraging and rearing, and its tributaries for spawning. The project will allow

the Council to develop a comprehensive approach to watershed protection and restoration activities. All Council-related habitat protection and restoration projects will be planned and implemented with consideration of life history traits and limiting factors for species of interest at a watershed scale.

(2) How does the proposal relate to other restoration efforts within the watershed? Were restoration activities complementary or would there be potential conflicts?

The comprehensive planning and implementation approach resulting from this project will be used for all Council-related protection and restoration activities across land uses and jurisdictions. The Council will continue to involve a majority of large landowners and major stakeholders within the watershed, thus ensuring that new projects are prioritized and developed within the comprehensive framework with technical consultation from scientists and other advisors.

(3) Does the proposal promote the restoration of normative ecological processes within the watershed?

The proposal builds upon the Council's current approach of using assessment and monitoring to understand and track key watershed processes that strongly influence ecological conditions necessary to maintain salmon, bull trout, and other fish and wildlife populations. In addition the completed assessment and prioritization process provides the Council with information necessary to promote the restoration of watershed processes when they are outside of the range of historical variation, using methods that are cost effective.

(4) Has the proposal considered the alternatives of passive restoration vs. active restoration?

The project does not include implementation tasks, but will allow the Council to prioritize protection and restoration activities. The Council's comprehensive approach to protection and restoration emphasizes protection of those areas that maintain most of their natural function, then working to restore highly degraded areas ("protect the best"). The Council promotes passive restoration to put the ecological system on the proper trajectory for improving watershed conditions, but will use active restoration in those areas where human impact has dramatically altered habitat quality and where the trajectory for passive recovery is long-term, which places species at-risk.

(5) Have any steps been taken within the watershed to correct the source(s) of the problem(s)?

The Council, through its partner organizations, is taking steps to address sources of problems. Several of the sub-watershed analyses developed and have begun to implement specific prescriptions to correct identified problems. Also, the Council is: a) working with County land-use planning processes to reduce residential development pressures on riparian areas; b) encouraging the use of best management practices across land uses and ownerships to reduce delivery of sediments and toxins to the stream; and c) working with the U.S. Army Corps of Engineers to modify water temperature regimes due to water releases from federal dams.

(6) Does evidence suggest that the proposed activity would actually correct a significant limiting factor to natural production?

For spring chinook salmon, two significant limiting factors have been hypothesized in the McKenzie Watershed: unnatural water temperature regimes, and lack of floodplain and backwater habitats for rearing fish in the lower McKenzie. The former limiting factor also has been identified for bull trout. The assessment will help to validate these hypothesized limiting factors. A completed watershed assessment also will delineate critical habitat areas where protection and restoration projects are both necessary and viable, thus facilitating reduction or reversal of limiting factors for fish and wildlife in the McKenzie Watershed.

The proposed watershed assessment and project prioritization addresses numerous goals and objectives of the 1994 Fish and Wildlife Program (FWP). Protection and restoration projects based in the assessment process outlined in this proposal are highly likely to result in achievement of the biological objectives associated with goals regarding increase of run sizes, maintenance of biological diversity, and mitigation of wildlife losses. More specifically, this proposal aligns with Measure 7.6A.1, "Ensure human activities affecting production of salmon and steelhead in each subbasin are coordinated on a comprehensive watershed management basis." The Council realizes that the watershed assessment, planning, and management approach outlined in Objective 7.6C, Coordinated Habitat Planning, is the best method to ensure effectiveness and success of watershed restoration projects, and proposes to use this objective as a model for its protection and restoration efforts in the McKenzie Watershed. Finally, the proposal also addresses general goals of Measures 7.6C.5 and 7.6A.2; the Council supports a parallel strategy of "protecting the best, then restoring the rest" and plans to use this approach as a framework in its prioritization process for protection and restoration activities derived from the habitat assessment.

c. Relationships to other projects

The McKenzie watershed assessment and project prioritizations are associated with a number of existing projects. The proposed projects will complement federal projects implemented within the scope of the Northwest Forest Plan's aquatic conservation strategy to protect fish and wildlife species. The assessment will gather data to fill information gaps about habitat conditions, particularly along the mainstem McKenzie River and on private lands. Information about the distribution, population trends, and habitat use of bull trout gathered by the BPA-sponsored Bull Trout Assessment – Willamette/McKenzie, will be invaluable in delineating critical habitat pieces and prioritizing protection and restoration projects. Finally, the proposal relates to the McKenzie Watershed Council Coordination project funded by BPA. Knowledge gained from the assessment will allow the Council to fulfill its goals of working with local stakeholders to prioritize, plan, and implement effective protection and restoration projects for McKenzie fish and wildlife habitat.

Another BPA project, Willamette Basin Acquisition, targets acquisition of critical wildlife habitat in the Upper Willamette Basin. There is currently a great deal of interest in restoring floodplain and side-channel function to the area around the confluence of the McKenzie and Willamette rivers. The confluence area was historically productive fish and wildlife habitat, characterized by a wandering channel pattern with numerous side channels and extensive bottomland forests (Benner and Sedell 1997). There has been extensive loss of channels and off-channel complexity in this area, disrupting the interconnections between the channel and the flood plain. The proposed assessment and prioritization process will provide information that can be used to target land protection and restoration efforts with the goal of protecting remnants of the historical riverine landscape and restoring this river-floodplain system, possibly supplementing current habitat conservation in the McKenzie/Willamette confluence and lower McKenzie Watershed areas. The proposed process also complements conservation programs now underway through federal and state agencies and a local land trust.

The assessment process will coordinate with state, federal, and other stakeholders involved in these programs and projects. Personnel representing stakeholders in the watershed will assist in shaping and guiding the assessment project. A completed assessment of fish and wildlife habitat for the entire McKenzie Watershed will be used by the Council to develop project priorities for recovery of spring chinook salmon, bull trout, and wildlife, and target protection (including land acquisitions) and restoration efforts.

d. Project history (for ongoing projects)

(Replace this text with your response in paragraph form)

e. Proposal objectives

- 1) **Synthesize the current knowledge of historic and present fish and wildlife populations and habitat conditions throughout the watershed and identify information gaps.**
- 2) **Where gaps exist, assess types, extent and locations of habitat modifications and existing high-quality habitat.**
- 3) **Develop GIS database for fish and wildlife habitat in the McKenzie Watershed (PRODUCT).**
- 4) **Project the impact of current growth and development trajectories on fish and wildlife habitat/populations throughout the watershed**
- 5) **Delineate locations for potential habitat protection and restoration and describe benefits to fish and wildlife.**
- 6) **Prioritize locations for habitat protection and restoration.**
- 7) **Develop biological monitoring and evaluation plan for habitat conditions in the watershed.**
- 8) **Develop final report that incorporates findings, recommendations and monitoring and evaluation plan (PRODUCT).**

f. Methods

The assessment will account for all anadromous and resident fish, and wildlife habitat requirements in the watershed, including those areas not previously subject to federal or private industry watershed analysis, and provide a synthesis of existing information. including anadromousresident fish and wildlife, and anadromous fish. Watershed assessments have been completed for all federal lands and most of Weyerhaeuser's ownership, in total comprising about three-quarters of the land in the watershed. The H.J. Andrews Experimental Forest is another source of information on watershed function (i.e., studies focusing on the impacts of the 1996 flood event) and the status and trends of wildlife populations, including a study of spotted owl demographics. Finally, the Council's Fish and Wildlife Task Group (McKenzie Watershed Council 1996) used the HABSCAPES habitat suitability model (Mellen et al. 1995) to evaluate habitat for guilds of wildlife species in the McKenzie Watershed. While this approach is only a screen to determine if suitable habitat for wildlife guilds occurs in the watershed, the HABSCAPES database lists habitat requirements for all 329 wildlife species present in the watershed.

The assessment will begin with the development of a list of null hypotheses regarding fish and wildlife populations and habitat to focus data synthesis, collection, and analysis. The assessment then will divide the watershed into environmentally distinct habitat types based on terrestrial habitat attributes (e.g., vegetation type, age and connectivity) and aquatic-riparian system characteristics (e.g., reaches based upon channel geomorphology, flow patterns, thermal cycles, connectivity of habitats, and other factors). The assessment process will use currently accepted methods for: 1) synthesizing current information about fish and wildlife populations and habitat; 2) characterizing fish habitat and aquatic resources and wildlife habitat; 3) gauging population growth and projecting the impact of land use change; 4) identifying critical habitat areas and prioritizing habitat protection and restoration opportunities at the scale of the McKenzie Watershed; and 5) developing a monitoring and evaluation plan to track progress. Proposed methods for each of these tasks are outlined below.

1) Synthesizing current information about fish and wildlife populations and habitat

This step will require using existing information on McKenzie Watershed fish and wildlife populations and habitats to provide a foundation for the assessment. The state of Washington Forest Service I-90 Land Exchange Draft Environmental Impact Statement (USFS 1998) provides a model for combining existing sub-watershed assessments to address fish/wildlife populations and habitat at a landscape scale. The synthesis process will require using the Council's existing comprehensive GIS database to provide a base for combining information from the various assessments and studies which are currently compiled in a GIS format. Information will be aggregated to give a McKenzie Watershed perspective on the historical and current spatial extent and location for a range of important watershed characteristics: upland vegetation type and seral stage; fish and wildlife distributions; stream and river flow and temperature regimes; aquatic habitat and geomorphology; flood plain, riparian, and wetland habitats and attributes. This information will be used, in consultation with the council and fish and wildlife managers, to determine key information gaps which are to be addressed in the next stages of the assessment.

2) Characterizing fish habitat and aquatic resources and wildlife habitat

Because watershed assessments have been completed for most of the sub-watersheds in the upper portions of the basin, the primary areas where gaps in information on fish and wildlife populations and habitat are expected is the mainstem river channel of the McKenzie and the lower river valley, including the outer edges of the Eugene-Springfield metropolitan area. This portion of the assessment will build upon existing assessment techniques, including the federal guide to watershed analysis (Regional Interagency Executive Committee 1995) and the State of Washington watershed analysis methods (Washington DNR 1995), to provide information on historical and existing fish and wildlife populations and habitat. These approaches will be combined with developing a characterization of aquatic habitat in the mainstream and salmonid life history information, especially for spring chinook populations (e.g., Lichatowich et al. 1995). This process will include identifying historical and existing high-quality habitats (e.g., flood plain, riparian and in-channel), describing connectivity between currently functioning habitats, and inventorying degraded habitats.

The Council will dramatically improve existing knowledge about wildlife populations and habitat throughout the watershed. While federal watershed analyses account for wildlife resources, those analyses conducted on private lands in the McKenzie Watershed did not assess the status of these resources. Baseline information from the Council's existing HABSCAPES database will be the framework for updating habitat maps in the McKenzie Watershed as part of this assessment. The contractor and/or agency scientists will re-run the HABSCAPES model using current satellite imagery to be made available by the

PNW Research Station (W. Cohen, PNW Research Station, personal communication), thus creating updated habitat maps to be used as a tool to determine if current habitat is in the necessary patterns to maintain target species. Following a method developed in Washington, zoning maps may be overlaid on these habitat maps to determine where important habitats will persist in the future and where, due to habitat loss or degradation, populations of target species may "blink out" (C. Friesen, U.S. Forest Service, personal communication). Additional techniques associated with Gap Analysis (Scott et al. 1996) will be used to determine critical areas for connectivity of habitat, and the adequacy of habitat distribution for key species or wildlife guilds.

3) Gauging population growth and projecting the impact of land use change

Hulse et al. (1997) describes a methodology for exploring how human population growth and land use change in a watershed can influence habitat and biodiversity. The assessment would project current population and land use trends out into the future (year to be determined, but possibly to 2025) and then use these trends to gauge impacts on aquatic and terrestrial habitat types (flood plains, riparian areas, range of seral stand classes, etc.), fish populations and key wildlife species and guilds. This analysis, in combination with the historical context, will provide information on the major human actions that will contribute to habitat loss into the future.

4) Identifying critical habitat areas and prioritizing habitat protection and restoration opportunities at the scale of the McKenzie Watershed

This portion of the assessment will prioritize watershed protection and restoration activities by building on the approaches described by Bradbury et al. (1995). This approach focuses on protecting key functioning habitats, addressing factors that are driving (current and future) habitat degradation, and, where necessary, restoring key areas to provide habitat connectivity and normative watershed process.

5) Developing a monitoring and evaluation plan to track progress

The monitoring plan will be based upon the development of protection and restoration objectives. Spence et al. (1996) describe a general biological monitoring framework for tracking whether biological objective are being met: 1) develop a set of questions or objectives that the monitoring should address; 2) determine the indicators that will be used to assess biotic and abiotic conditions as well as ensure that these indicators can be related to the ecological values, and the natural and anthropogenic stressors; 3) use the index concept in selecting the sampling sites and sampling locations; 4) develop a sampling design that is appropriate for answering the questions; 5) establish conditions against which the protection/restoration efforts can be measured; 6) apply the data to answer the monitoring questions and develop new questions; 7) evaluate the effectiveness of the strategy and implementation; and 8) identify ecosystem elements requiring additional assessment or research.

The fish and wildlife habitat information generated from the assessment will be site-specific and maintained in the Council's GIS database. The results of this project will be used, in consultation with the Council, to develop priorities on specific areas for habitat protection/ restoration and develop a long term implementation and funding strategy. The assessment and the selection of areas to target for habitat protection will be coordinated with a Council Task Group consisting of public and private landowners, fish and wildlife managers such as those involved with the Spring Chinook and Upper Willamette Bull Trout working groups, and the Habitat Conservation and Acquisition Working Group, a consortium of public and private interests and the McKenzie River Trust. In addition, this project will coordinate with other studies in the watershed.

The assessment will be conducted by a contractor or several contractors, with possible sub-contractors. The contractor(s) will be selected by the McKenzie Watershed Council's Fish and Wildlife Task Group through a request for proposals process. The Council's Task Group will constitute a steering committee that provides guidance to the consultants. The Council's coordinator will be responsible for overall project management and coordination.

Specific tasks associated with the objectives:

Objective 1 - Task a: *Work with Fish and Wildlife Task Group to develop list of null hypotheses regarding fish and wildlife populations and habitat to focus data synthesis, collection, and analysis*

Task b: *Collect, organize and synthesize information from completed sub-watershed analyses, agency reports and other studies.*

Task c: *Identify the target species, the status of those species, and key habitat attributes for maintaining or improving populations.*

Task d: Assess types, extent and locations of historic habitat; summarize current condition of terrestrial and riparian-aquatic habitat modifications; identify known existing high-quality habitat.

Task e: Identify and assess the status and trends of key human modifications (e.g., dam regulation of temperature regimes) and natural characteristics (e.g., degree of channel confinement) and processes of the watershed and how they function and interact.

Task f: Work with Fish and Wildlife Task Group/Watershed Council to identify information gaps.

Objective 2 – Task a: Assess habitat conditions through time using historical maps, photographs and other information sources.

Task b: Determine the location, nature, and extent of habitat changes.

Task c: Develop a chronology of habitat change and describe the natural and human-caused disturbance events that influence the direction of the changes.

Task d: Describe and quantify current terrestrial and riparian-aquatic habitat conditions, including high-quality habitat.

Objective 3 - Task a: Develop GIS data layers with locations and information on historic and current terrestrial and riparian-aquatic habitat quality.

Task b: Develop GIS data layers with locations and information on habitat protection and restoration sites and priorities.

Objective 4 – Task a: Use census and land use planning information to gauge population growth and development trends.

Task b: Project specific locations (e.g., flood plains) and nature (e.g., urban or rural residential) for development in the basin.

Task c: Gauge impacts of projected land use changes on fish and wildlife habitat quality/quantity and populations.

Objective 5 - Task a: Identify important terrestrial and riparian-aquatic habitat refuges or areas sensitive to management activities.

Task b: Identify areas that most directly affect riparian-aquatic habitat function (e.g., wetlands, side channels, and flood plains) or terrestrial habitat quality (e.g., multi-layered forest stands).

Task c: Identify/prioritize areas/habitat types that are likely to experience significant land-use transformations in the future.

Task d: Work with Fish and Wildlife Task Group/Watershed Council to identify/update habitat protection and restoration goals and objectives based on key habitat attributes.

Task e: Identify how site-specific protection or restoration measures will maintain or improve populations.

Task f: Identify areas that may be easily restored to provide more refuges and/or connect productive habitat types.

Objective 6 - Task a: Provide recommendations on site-specific terrestrial and riparian-aquatic protection and restoration areas and projects.

Task b: Work with Fish and Wildlife Task Group/Watershed Council to identify habitat protection and restoration project priorities, including land acquisitions.

Objective 7 - Task a: Determine watershed indicators to monitor changes in biological or physical states and assess influences of human and natural disturbances and restoration activities.

Task b: Link the monitoring and evaluation plan back to the protection and restoration goals and objectives.

Task c: Work with Fish and Wildlife Task Group/Watershed Council to determine the monitoring plan's institutional and financial commitments and time lines.

Objective 8 - Task a: Develop draft report that incorporates findings, recommendations and monitoring and evaluation plan.

Task b: Fish and Wildlife Task Group/Watershed Council provide draft report review and recommend revisions.

Task c: Produce final report.

g. Facilities and equipment

The contractor(s) will be required to demonstrate facilities and equipment that are adequate to complete the assessment, including photo interpretation, GIS capabilities, graphics and report preparation.

h. Budget

The largest proportion of the budget is for direct project costs, with 16% devoted to overhead costs. Justification for the budget is as follows: 1) \$14,000 for increasing watershed council staff hours/benefits to cover coordination/administration for this project (approximately 0.20 FTE); 2) \$14,000 (8% of funding requested from BPA) for fiscal/contract administration by Cascade Pacific Resource Conservation and Development (currently the Council's fiscal management organization); 3) \$155,000 is proposed to cover the funding of a contractor(s) to complete all of the assessment components, including managing a multi-disciplinary staff, working with Task Group and Council staff, completing GIS development and final report production.

In addition to the BPA funds requested for this project, we have secured in-kind technical assistance and anticipate substantial support through contributions from federal and non-federal Council members, including private landowners. Four partner organizations have committed a total of \$40,000 in technical assistance to the assessment process. Also, the Wyden Amendment creates several opportunities for cost sharing between the Council and its federal partners. The U.S. Forest Service (USFS) and Bureau of Land Management (BLM), which now are authorized to spend federal dollars on private lands, are exploring opportunities for additional funding for the McKenzie Watershed habitat assessment and project prioritizations process. In addition to technical assistance and oversight from agency scientists, USFS and BLM may provide cash contributions to this project. The Council expects that involvement by these agencies will leverage funding and/or in-kind support from other partner organizations.

Section 9. Key personnel

John Runyon is the Watershed Coordinator (0.5 FTE) for the McKenzie Watershed Council, and has served in this capacity since March 1997. Mr. Runyon, who has considerable expertise in watershed assessment and restoration projects, is currently serving on the Board of the Willamette Basin Restoration Initiative. Mr. Runyon will serve as project manager (with increased FTE) for the McKenzie Watershed Habitat Assessment and Project Prioritizations. He will provide coordination between the contractor and the Fish and Wildlife Task Group/McKenzie Watershed Council, and complete such duties as: providing leadership for the Fish and Wildlife Group overseeing the assessment and coordinating the flow of information from agencies and landowners to the contractor(s).

JOHN R. RUNYON

McKenzie Focus Watershed Coordinator

EDUCATION

M.S., Forest Ecology, Oregon State University, 1992

M.S., Political Science, University of Oregon, Eugene, 1988

B.S., Environmental Biology, Oregon State University, Corvallis, 1983

CURRENT POSITION AND DUTIES

Coordinator, McKenzie Focus Watershed Council

Responsible for overall project management and coordination for the McKenzie Watershed Council.

Duties include project planning, coordinated implementation, and monitoring; proposal preparation; fiscal management; public outreach and communication of council activities.

EMPLOYMENT HISTORY

Watershed Analysis Consultant, Corvallis, OR, 5/95 to present

Senior Scientist, Dynamac, Inc., and ManTech Environmental Technology, Inc., research contractor for the U.S. Environmental Protection Agency, Corvallis, OR, 5/95 to 7/96
Resource Monitoring Coordinator, Oregon Dept. of Forestry, Salem, OR, 7/92 to 5/95
Faculty Research Assistant, Forest Science Dept., Oregon State University, 7/90 to 7/92

EXPERTISE

Mr. Runyon has expertise in planning and managing complex ecosystem research, assessment and monitoring projects. Mr. Runyon has extensive experience in the areas of watershed analysis, stream habitat inventories, riparian assessments, and water quality monitoring.

SELECTED RECENT PUBLICATIONS / DOCUMENTS

Runyon, J.R. and K. Mattson. 1997. *Stream Habitat, Riparian and Fish Use Survey Summaries for Selected Streams in the Siuslaw, Alsea and Nestucca River Basins*, Final Report for the Siuslaw National Forest, Corvallis, OR.

Runyon, J.R., C. Andrus, and K. Mattson. 1996. *Mercer / Berry Watershed Analysis*, Final Report for the Siuslaw National Forest, Corvallis, OR.

Runyon, J.R. 1995. *Monitoring Forest Stream Enhancement Projects*. Oregon Departments of Forestry and Fish and Wildlife, Salem, OR.

Runyon, J.R., R.H. Waring, S.N. Goward, and J. Welles. 1994. *Environmental limits on net primary productivity and light-use efficiency across the Oregon transect*. *Ecological Applications* 4: 226-237.

Runyon, J.R. 1994. *Forest Practices Monitoring Program Strategic Plan*. Oregon Department of Forestry, Salem, OR.

Section 10. Information/technology transfer

Information obtained from the McKenzie Watershed Habitat Assessment and Project Prioritizations will be disseminated through a number of mechanisms. The project will conclude with a report and GIS database. The report will be disseminated to public officials such as the Lane County Board of Commissioners and Springfield City Council in the McKenzie Watershed, and to decision makers throughout the Willamette Basin. Presentations about conclusions and priorities for restoration and monitoring will be given at meetings of the McKenzie Watershed Council and McKenzie-related technical committees, and during sessions such as the Governor's Watershed Enhancement Board (GWEB) conferences and meetings of the Willamette Basin Restoration Initiative, as requested. Data synthesized and gathered during the assessment may be made available for access via the "StreamNet" database. The assessment information, GIS graphics, and conclusions will be shared through the Watershed Council's extensive public outreach program, including citizen workshops, press releases, newsletters and fact sheets.

All information generated through McKenzie Focus Watershed projects will continue to be shared through:

- 1) Participation in the Willamette Basin Restoration Initiative process;
- 2) Participation in the Willamette Basin watershed coordination process;
- 3) Production of monitoring and project reports;
- 4) Participation in Columbia Basin technical groups and review processes;
- 5) Presentations and displays at conferences; and
- 6) Publications in peer-reviewed and other journals and publications.

Congratulations!